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NHRC DENIM DAY



CHASING A PASSION: NMRC RESEARCHER PARTICIPATES IN ANNUAL BOSTON MARATHON (COVER)

From Naval Medical Research Center Public Affairs



SILVER SPRING, Md. – “I trained for almost three years to improve my time and qualify for the Boston Marathon,” said Lt. Joshua Swift, researcher, Operational Undersea Medicine Directorate (OUMD), Naval Medical Research Center (NMRC). Swift ran the 2017 Boston Marathon April 17, and completed the 26.2 mile run in 3:31:34.

The Boston Marathon is an annual marathon hosted by several cities in the greater Boston, Massachusetts area. Established in 1897, the Boston Marathon is the world’s oldest annual marathon and ranks as one of the world’s best known racing events, according to the Boston Athletic Association. The marathon has a deep, rich, history and is known to be a very competitive event.

“The Boston marathon is the most prestigious marathon in the world, it is the race that all marathoners aim to qualify for and participate in,” said Swift. In preparation for the marathon, Swift typically ran 5-6 days a week, and tried to get at least one long run in each week. “Running gives me a euphoric and peaceful feeling that can’t be matched,” said Swift. He continued, “It’s difficult to describe, but it becomes a form of addiction that you constantly chase.”

While Swift aims for his best in every race, for him, this race was a little different. “Coming off of an injury during a race last November, I decided I wanted to run a nice steady pace and enjoy the experience of it all,” said Swift.

“This particular marathon is an emotional journey, and throughout the journey you see numerous instances of human compassion, bravery, and joy. Running alongside single and double amputees who lost limbs in combat, survivors of the marathon bombing in 2013, family members running in honor of fallen service members, and other courageous individuals is a humbling experience,” added Swift.

While Swift chases his cardio dreams outside, some of his best work comes from the laboratory. As a researcher for OUMD, Swift is currently researching cardiopulmonary and exercise performance at high altitude, which could have a huge impact on the Warfighter by eliminating the need for altitude acclimatization or the need to carry supplemental oxygen.

“Understanding the human body and mind has had a great impact on my performance as a marathon runner,” said Swift. When asked to give advice to future marathon runners, he said “for anyone who thinks running a marathon is a task too difficult to undertake, you’re selling yourself short. A marathon is a constant battle of your mind against your body. You have to be willing to overcome your mind and push through to the finish.”

The Boston Marathon may feature the world’s greatest marathon runners, but it is the stories of the heroic individuals who overcome so much to participate and finish the race that make it special.

“I am very proud to be a part of Boston and its legacy,” said Swift.

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SCIENCE TAKES ON SEXUAL ASSAULT (FEATURE)

From Naval Health Research Center Public Affairs



SAN DIEGO – Naval Health Research Center (NHRC) hosted a Sexual Assault Awareness and Prevention Month (SAAPM) activity April 27, to highlight the important role that science and research have in preventing sexual assault.

“In order to prevent sexual assault, we need to understand what puts people at risk,” said Cindy Thomsen, Ph.D., health and behavioral sciences department head at NHRC. “To do that, we need research.”

Research, said Thomsen, is powerful because it provides empirical evidence for solving problems. Instead of guessing at what strategies or interventions might prevent sexual assault, researchers design scientific studies that produce actual evidence of what does work.

“Science enhances our knowledge and understanding of the world,” Thomsen added. “It gives us important background knowledge to inform our decisions. Scientific research has implications for issues we face every day and fuels advancements in technology and breakthroughs in health and medicine.”

Sexual assault research throughout the Department of Defense (DoD) became a topic of interest in the 1980s and the DoD Sexual Assault Prevention and Response Office (SAPRO) was formed in 2004. Research conducted by SAPRO informs their work in sexual assault response and prevention and has led to important changes for victims of assault including restricted reporting, the Special Victims’ Counsel, and expedited transfers.

A special guest at NHRC’s SAAPM event was Ms. Jeannette Casillas, sexual assault response coordinator for Naval Base Point Loma.

“We go beyond that one month out of the year,” said Casillas. “We are here every single day of the year to eradicate sexual assault.”

Casillas emphasized the importance of gathering statistical data to increase knowledge and better inform efforts to prevent sexual violence and support victims.

Currently, sexual assault research in the military does just that by focusing on the effects of sexual assault on victims, prevention strategies, and risk factors for victimization.

“Well-conducted research is crucial to military readiness and force fitness,” said Thomsen.... (cont.)

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R&D CHRONICLES: DR. NIIRANEN AND THE BIRTH OF “MR. DISASTER”

By André B. Sobocinski, Historian, BUMED

“As gruesome as it may be, the realism of the plastic manikin is expected to play an important part in helping to indoctrinate military personnel to their roles as emergency physicians in the event of an atomic attack or other emergencies.”

~Modern Plastics on the Invention of “Mr. Disaster,” March 1954

In September 1949, Cmdr. Victor Niiranen (1916-1993) reported to the National Naval Medical Center, Bethesda, Maryland, as the new head of the Audio and Visual Department. Perhaps this was not the most typical assignment for a dentist, but the World War II veteran and maxillofacial prosthodontist took to the position with great gusto. Over the next four years, Niiranen devised numerous innovative training aids for the Navy including a life-like arm



with simulated veins for practicing injections and blood withdrawal; he also developed a special mouth guard (“resilient plastic interdental splint”) for the National Boxing Association to prevent dental trauma in the boxing ring. But without a doubt Niiranen’s most famous creation would also have the most unforgettable name: “Mr. Disaster.”

First exhibited by Niiranen August 17, 1953, before a Navy audience in Washington, D.C, Mr. Disaster (aka, “Mark I”) was a life-size manikin used for demonstrating the treatment of trauma injuries. The pioneering simulacrum was sculpted by artist Louis Di Valentin (1907-1982) and was made of plastic reinforced with fiberglass.

What made this manikin truly innovative was a patented system for pumping “blood” (glycerin, water and red vegetable dye) to six major wound points on the legs, arms, abdomen, chest and mouth. The rate of blood flow was controlled by individual valves and the blood was stored in a tank at the manikin’s base.

Mr. Disaster could be used to simulate everything from penetrating chest wounds to jaw fractures, and even choking by a foreign body in the throat.

For Niiranen, Mr. Disaster was born out of a need for a “realistic” casualty care training aid for all members of the Navy; but he also knew it had value beyond the military services. From 1953 to 1956, Niiranen hit the road exhibiting the manikin at 34 dental and medical meetings across the country, and covering some 53,000 miles in the process. He would even appear on the popular television show, You Asked for It, demonstrating the manikin’s versatility before an estimated nation-wide audience of 20 million viewers.... (cont.)

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U.S. NAVAL MEDICAL RESEARCH UNIT No. 6 HOLDS CHANGE OF COMMAND CEREMONY

From Lt. J. Regeimbal, NAMRU-6 Public Affairs



PERU – Capt. Guillermo “Billy” Pimentel relieved Capt, Adam W. Armstrong as commanding officer of U.S. Naval Medical Research Unit 6 (NAMRU-6), Peru, March 27, 2017.

The change of command ceremony was attended by the Honorable Brian Nichols, U.S. Ambassador to Peru; Rear Adm. Paul D. Pearigen, Commander, Navy Medicine West; Vice Adm. Silvio Javier “Alva” Villamon, General Director of Personnel, Peruvian Navy; Rear Adm. Julio Cesar “Cacho” Moran, Peruvian Navy Surgeon General, and numerous distinguished guests, visitors, and family members. The change of command was presided over by Capt. Jacqueline Rychnovsky, commanding officer, Naval Medical Research Center, prior to her retirement, April 27, 2017.... (cont.)

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NAMRU-D SHOWCASES SCIENTIFIC SKILLS TO REAR ADMIRAL PAUL PEARIGEN, NMW COMMANDER

From Naval Medical Research Unit - Dayton Public Affairs

DAYTON, OH. – All hands were on deck to welcome Rear Admiral Paul D. Pearigen, commander, Navy Medicine West, to the Naval Medical Research Unit Dayton (NAMRU-D), April 3. Having previously visited the U.S. Naval Medical Research Unit 6 (NAMRU-6) in Peru as part of a larger tour of the Naval Medical Research Enterprise, the Dayton visit was the first here for Pearigen. It served as an introduction to the multifaceted aerospace medical and environmental health effects research conducted at NAMRU-D.

Pearigen started the day with an overview brief by Capt. Rees L. Lee, commanding officer, NAMRU-D, showcasing the laboratory’s many historical accomplishments, both scientific and administrative, and highlighting current and future research projects....(cont.)



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NAVY RESEARCHERS INVESTIGATE PHAGE THERAPY TO TREAT PERIODONTAL INFECTIONS

By Yoon Hwang, Ph.D, Naval Medical Research Unit - San Antonio



SAN ANTONIO – Mission readiness is critical to the success of the U.S. military and the health of service members is of highest importance. Almost 20 percent of all emergency department visits at a deployed expeditionary medical support facility during Operation Enduring Freedom were the result of dental disease.

In deployed military personnel, 12 percent of dental emergencies can be attributed to gingivitis or periodontitis. Furthermore, the emergence and increasing prevalence of bacterial strains resistant to available antibiotics poses a serious threat not only to the military, but to world health.

The Centers for Disease Control and Prevention reported antibiotic resistance causes two million serious infections and 23,000 deaths each year; adding \$20 billion in excess direct health care costs, in addition to \$35 billion in lost productivity each year.

A critical need exists for the development of novel antimicrobials and alternative strategies for treating bacterial infections. Antimicrobial peptides, or AMPs, and bacteriophages (a virus that targets a bacterium) have shown promise as potential therapeutics.

AMPs are short, positively charged and amphiphilic peptides, reported to provide potent, broad-spectrum activity against microbial infections and have been considered as potential therapeutic sources for future antibiotics.

Bacteriophages infect and replicate in their specific host bacterial cells, then release progeny phages to infect more bacteria nearby. The therapeutic use of bacteriophages to treat pathogenic bacterial infections is known as phage therapy and has many potential applications in medicine as well as dentistry.

A unique aim of research within the Craniofacial Health and Restorative Medicine Directorate at Naval Medical Research Unit-San Antonio at Joint Base San Antonio-Fort Sam Houston is to combine the strength of AMPs and phages together by engineering phages to express AMPs during their lytic cycle.

To achieve maximal synergistic effect, a technique to genetically modify phages was developed by inserting an AMP-expressing genetic construct within the phage genome. By replicating within the targeted bacterial cells and expressing AMPs in the infection site, this novel approach can achieve high local concentrations of both AMPs and lytic phages to target nearby bacteria – even with modest initial phage inoculation – and enhance the range of the original phage infection....(cont.)

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NAVY MEDICINE R&D ENTERPRISE HOLDS ANNUAL COMMANDER'S CONFERENCE

From Naval Medical Research Center Public Affairs

SILVER SPRING, Md. – The Naval Medical Research Center (NMRC) held the Research and Development Enterprise Commander's Conference, May 4-5, 2017. The conference provided an opportunity for the laboratory leadership to discuss successes, challenges and future goals.

The enterprise includes eight laboratories, NMRC, Naval Health Research Center, Naval Submarine Medical Research Laboratory, Naval Medical Research Unit – San Antonio, Naval Medical Research Unit – Dayton, U.S. Naval Medical Research Center – Asia, U.S. Naval Medical Research Unit No. 3 Cairo, and U.S. Naval Medical Research Unit No. 6 Peru.

In attendance were the commanding officers and executive officers for each laboratory, science directors and comptrollers, as well as representatives from the Bureau of Medicine and Surgery, and Rear Admiral Paul D. Pearigen, commander, Navy Medicine West.. (cont.)

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DoD-VA RESEARCH PARTNERSHIP TO IMPROVE UNDERSTANDING OF ACTIVE DUTY & VETERAN HEALTH

From Naval Health Research Center Public Affairs



SAN DIEGO – A new partnership between DoD and VA medical researchers achieves a milestone with its first joint publication, which examines post-traumatic stress disorder (PTSD) symptoms in veteran and active duty populations. The study will be published in the Journal of Psychiatric Research, June 2017.

The new study, the first to compare PTSD symptom trajectories of current and former service members, was authored by researchers from the VA and the DoD's Millennium Cohort Study (MCS), a longitudinal study to evaluate the health of military personnel throughout their careers and after, launched in 2001 and led by the Naval Health Research Center.... (cont.)

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NAVY LAB IN GHANA HOSTS MALARIA DIAGNOSTIC SYMPOSIUM FOR REPS FROM 15 AFRICAN COUNTRIES

From U.S. Naval Medical Research Unit No. 3 Public Affairs

ACCRA, Ghana – Military members from 15 different countries on the continent of Africa attended a two-week malaria diagnostic symposium in Accra, Ghana, February 27 – March 10, 2017. The United States Africa Command's (U.S. AFRICOM) Africa Malaria Task Force (AMTF) sponsored the event, which was hosted by the U.S. Naval Medical Research Unit No. 3 (NAMRU-3), Ghana Detachment.



The Kofi Annan International Peacekeeping Training Center (KAIPTC) provided the symposium space as well as the logistic needs for AMTF participants from Benin, Burkina Faso, Burundi, Côte d'Ivoire, Djibouti, Ghana, Guinea, Kenya, Liberia, Niger, Nigeria, Senegal, Sierra Leone, South Sudan, and Togo. Participants focused on malaria diagnostic techniques and improving identification skills.

The symposium offered discussions on all aspects of malaria diagnostics; from microscopy and lab safety to speciation, artifact detection and multiple-species infections. Each lecture was followed by lab time allowing participants immediate hands-on practice.

Army Captain Thomas Gilbreath, Chief, Malaria Diagnostic Center, U.S. Army Medical Research Directorate-Kenya (USAMRU-K) was one of several AMTF facilitators responsible for curriculum development.

"I was an AMTF participant last year. My experience from this gave me a better perspective in the development of this year's curriculum," said Gilbreath.

Participants were given written and practical tests before and after the completion of the course allowing facilitators to gauge level of knowledge gained.

Scores improved by as much as 45 percent over the course of the symposium, according to Navy Cmdr. Andrew Letizia, officer-in-Charge, NAMRU-3 Ghana Detachment.

For Major Robert M. Gatata, Medical Laboratory Officer, Kenya Defense Forces, Defense Forces Memorial Hospital Nairobi, the microscopy portion of the course was the most important aspect....(cont.)

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